

Notice of Allowability

Application No.

10/708,985

Examiner

Richard V. Muralidar

Applicant(s)

CHEN ET AL.

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/06/2004.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 04/06/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

REASONS FOR ALLOWANCE

The following is the examiner's statement of reasons for allowance. The prior art does not disclose or suggest "an error amplifier for generating at least one error signal representative of a difference between the at least one voltage detection signal and a command voltage signal" nor a "feedback circuit that prevents the at least one error signal from being applied to the second linear unit, thereby controlling the driving voltage to become substantially proportionally to the command voltage," in combination with the remaining claim elements as set forth in Claims 1-20.

The prior art made of record in the attached PTO-892 is considered to be pertinent to the submitted application.

Canclini [US 5631527] discloses an H-bridge controller for a voice coil circuit that consists of two amplifiers with feedback loops that are used to control the low side switches, as well as a separate controller for the high side switches. The amplifiers do not sense the voltage from both sides of the motor coil and ground, nor do they cause the driving voltage to become proportional to the controller command voltage.

Hale et al [US 5343382] discloses an H-bridge with adaptive closed loop current control that uses two amplifiers to sense the voltage difference across the terminals of the motor coil, which is then processed through a network of logic circuits and used to control the two low side switches. A separate controller switches the high side switches instead of the low side switches.

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Kelly [US 6229273] discloses an H-bridge driver circuit that uses two differential amplifiers to control the low side switches, and a separate controller for the high side switches. The amplifiers sense voltage across the two terminals of the motor coil, instead of through voltage dividers to ground.

Mizumoto et al [US 6384556] discloses an H-bridge motor driving circuit that uses a current detection resistance connected from lower portion of the bridge and ground, to switch a clocked SR latch, which is then used to control both the high side and low side switches. A separate state control circuit to command the low side switches is not used.

Neary et al [US 5744922] discloses a current regulator for an H-bridge controller, which uses an amplifier to sense the switched voltage across the motor coil, which is then processed by logic circuitry and used to control both the high side and low side switches of the H-bridge. The amplifiers sense voltage across the two terminals of the motor coil, instead of through voltage dividers to ground.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "comments on statement of reasons for allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard V. Muralidar whose telephone number is 571-272-8933. The examiner can normally be reached on Monday to Friday 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on Monday to Friday 8-5. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be "D. Gray", with a long horizontal line extending to the right.

DAVID M. GRAY
PRIMARY EXAMINER

RVM
03/24/2006